

In re Patent Application of:  
**SHIER ET AL.**  
Serial No. 10/715,165  
Filed: November 17, 2003  

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**ATTACHMENT 6 PAGES (pgs 2-7)**  
**CORRECTED SECTION OF NONCOMPLIANT AMENDMENT**

**AMENDMENTS TO THE CLAIMS**

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IN THE CLAIMS

1. (original) A vertical cavity surface emitting laser  
comprising:

a first mirror region forming a first distributed  
Bragg reflector;

a first cladding region positioned on the first  
mirror region;

an active region positioned on the first cladding  
region;

a second cladding region positioned on the active  
region and including a high electrical resistance implanted  
region positioned to define a current path;

a second mirror region positioned on the second  
cladding region;

a current spreading region positioned on the  
second mirror region;

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a first electrical contact in electrical communication with the current spreading region and a second electrical contact positioned to conduct electrical current in circuit with the first electrical contact through the current path;

the current spreading region and the second mirror region cooperating to produce substantially uniform current distribution in the current path; and

a third mirror region positioned on the current spreading region, the second and third mirror regions cooperating to provide a complete distributed Bragg reflector.

2. (original) A vertical cavity surface emitting laser as claimed in claim 1 wherein the first mirror region, the first cladding region, the active region, the second cladding region, the second mirror region, and the current spreading region include epitaxial semiconductor layers.

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3. (original) A vertical cavity surface emitting laser as claimed in claim 1 wherein the high electrical resistance implanted region includes ion implanted material.

4. (original) A vertical cavity surface emitting laser as claimed in claim 1 wherein the second mirror region includes from one to five pairs of alternate mirror layers of a first material with a first index of refraction and a second material with a second index of refraction.

5. (original) A vertical cavity surface emitting laser as claimed in claim 1 wherein the current spreading region includes at least one highly doped semiconductor layer.

6. (original) A vertical cavity surface emitting laser as claimed in claim 1 wherein the third mirror region includes a plurality of pairs of one of alternate semiconductor layers and alternate dielectric layers.

7. (original) A vertical cavity surface emitting laser as claimed in claim 1 further including an index guide formed in the current spreading region.

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8. (original) A vertical cavity surface emitting laser as claimed in claim 1 further including a notch formed in the first mirror region to limit a diameter to approximately a primary mode of operation.

9. (original) A vertical cavity surface emitting laser as claimed in claim 1 further including a tunneling junction.

10. (original) A vertical cavity surface emitting laser comprising:

a first mirror region forming a first distributed Bragg reflector;

a first cladding region positioned on the first mirror region;

an active region positioned on the first cladding region;

a second cladding region positioned on the active region and including a high electrical resistance ion implanted region positioned to define a current path;

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a second mirror region positioned on the second cladding region including from one to five pairs of alternate mirror layers of a first semiconductor material with a first index of refraction and a second semiconductor material with a second index of refraction;

a current spreading region including a heavily doped semiconductor layer positioned on the second mirror region;

an index guide formed in the current spreading region, the index guide defining a lasing cavity;

a first electrical contact in electrical communication with the current spreading region and a second electrical contact positioned to conduct electrical current in circuit with the first electrical contact through the current path;

the current spreading region and the second mirror region cooperating to produce substantially uniform current distribution in the current path; and

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a third mirror region positioned on the current spreading region, the second and third mirror regions cooperating to provide a complete distributed Bragg reflector.

11. (original) A vertical cavity surface emitting laser as claimed in claim 10 wherein the third mirror region includes a plurality of pairs of one of alternate semiconductor layers and alternate dielectric layers.

Claims 12 to 26 (cancelled)